

722.1
.E23

CHINESE ARCHITECTURE

EDKINS

CHINESE ARCHITECTURE.

BY

JOSEPH EDKINS, D.D.



SHANGHAI—HONGKONG—YOKOHAMA—SINGAPORE :
KELLY & WALSH, LIMITED.

LONDON :

KEGAN PAUL, TRENCH, TRÜBNER & Co., Ltd.

—
1890.

[Reprinted from the *Journal of the China Branch of the Royal Asiatic Society.*]

CHINESE ARCHITECTURE.



TO understand the architecture of a country it is necessary to have some knowledge of antiquity. All architecture rests upon the past and embodies the ideas of the men of earlier generations. If, for example, we approach a Gothic cathedral, we observe it may have on the outside rows of statues sculptured on the front, representing the prophets and apostles of scripture. They are intended to shew that the Christian religion, for the conduct of the worship of which this splendid church was built, was founded on the teaching of the men whose statues we see. If they are in rows, as in Wells Cathedral, there is an idea borrowed from Greek art, which loved to represent battles, religious processions, gymnastic contests, feasts, marriages and court pageants in this way. Entering we pass the font, which reminds us that baptism admits a man to the Christian assembly. The thought then occurs that the door of the building is the gate of admission to the congregation, and that the building is symbolical in all its principal features. In the nave occupied by the assembly of worshippers, the congregation, which is entered by baptism, is symbolized. The aisles may possibly be separately assigned to men and to women, but are the parts of the one church. The mysteries and highest truths of the Christian faith are symbolized by other chief features of Gothic architecture. The whole has an adaptation to impress both the cultivated and the ignorant. Architecture in such a case has an effect of the most striking kind on minds endowed with genius. So it was with Milton, whose familiar

words I shall be pardoned for using here as a noble introduction to my subject :—

But let my due feet never fail
To walk the studious cloisters pale,
And love the high-embowed roof,
With antick pillars massy proof,
And storied windows richly dight,
Casting a dim religious light :

But the poet wished to describe the effect of music as well as of architecture on the worshipper, and he adds :—

There let the pealing organ blow,
To the full-voic'd quire below,
In service high, and anthems clear,
As may with sweetness, through mine ear,
Dissolve me into ecstasies,
And bring all heaven before mine eyes.

Gothic architecture is a medium for religious impression, and its parts are adapted for the conduct of Christian worship. Provision is made for the reader, the preacher, and the musical features of the service. The high arches of cathedrals are not only intended to symbolize celestial aspiration, but also to allow of deep impression being made on the audience by full and reverberating waves of sound.

I.—CLASSICAL CHINESE ARCHITECTURE.

It may be asked, if such be the aim of Gothic architecture and its successful result, what is the aim of Chinese architecture, and is it effective within its own sphere, only having regard to its original ideas ?

First, I remark that in classical Chinese architecture *there is no distinction of an essential kind between sacred and secular buildings.* The farther we go back the more clear does it appear that the palace was a temple and the temple

was a palace. This same circumstance in the architecture of the Assyrians struck LAYARD and other students of Assyrian antiquities. The same fact appears in the old Chinese records. We are told in one of the first chapters of Mencius that Ch'i Siuen Wang, King of the Ch'i country, asked him if he should order the Ming tang in his territory to be destroyed, as many persons advised him to do. Mencius said, No ; it was the hall for the emperor to announce correct principles of government in the assemblies of the barons. If you wish to act as a king ought, and practise the duties of a wise ruler, do not destroy it. This was his advice. The emperors formerly came, when they visited Tai shan, to hold here a great feudal assembly, to sacrifice to ancestors, to sacrifice to heaven and to reside in it themselves during their stay. This, we partly learn from Panku, who relates that Han wu ti, on visiting Tai shan, found there the foundations only of the Ming tang of the Cheu dynasty. The time would be about B.C. 120. The altar and the hall were gone at that time. Cheu kung, the great sage, sacrificed to his deceased father, Wen wang, in the Ming tang of the Imperial residence, placing his tablet in a subordinate position at the time of sacrificing to Shang ti. This was to confer the greatest possible honour upon his deceased father. In the Ming tang there was worship offered to the sun and moon, also an altar for burnt sacrifice, in which case the victim was laid on wood and burnt. When the covenant was made between sovereign and feudal barons the emperor sat on a throne nine feet high during the Cheu dynasty, three feet high in the Shang dynasty, and one foot high in the Hia. The throne was a dais, and the emperor sat on it cross-legged. The commentator on the *Chow-li*¹, from whom I learn these particulars, adds that when the covenant had been determined

¹ See 考工記 *K'au kung ki*, the supplement to the *Chow-li*.

on, the fact was announced to the bright spirits, and therefore the hall was called the “Bright Hall,” which is the meaning of the name Ming tang. We gather from this, by the way, the true explanation of the common phrase “Shen ming,”—spirits and bright intelligences. This phrase is much used in modern Chinese for worshipped beings who are believed to come and throng round the spots where sacrifices are offered and prostrations made. They also scrutinize and reward or punish the actions of mankind.

2.—*In the construction of the ancient palaces of the Chinese emperors there were three objects kept in view.* They were for religious purposes, for feudal audiences and consultations, and they included private apartments for the emperor. The feudal compacts needed to be confirmed by religion. The emperor was chief sacrificer, and there never was in China any notion of local sanctity in buildings. All the reverence attached to a palace is on account of the emperor, the brother of the sun and moon, and his ancestors.

It became convenient, when the sovereign was at home in his capital, for the worship to be performed at spots removed from the palace, but down to the present time the ancestral hall is still attached to the palace on the south-east. So also the great halls and courts where the emperor meets the princes and high officers are connected with the palace. The altar of the spirits of the grain and land is also as near to the palace on the south-west as the temple of ancestors on the south-east. The arrangement of buildings in the capital at the present time is therefore in principle like the old classical arrangement, which combines the three ideas of temple, hall of audience and private residence.

In the building of the Imperial capital all favourable circumstances must be combined. There was in ancient times no *feng shui*. This is a recent superstition. But it was required to have lucky portents and begin laying out a city

upon a lucky day. Cheu kung the sage measured north and south with the gnomon's shadow. The gnomon was eight feet long. The time was noon on the day of the commencement of spring B.C. 1109. He used plummet-line and mason's rule, and the latitude was that of Honan fu, or $34^{\circ} 43' 15''$. The mats he used to lay out the palace were six English feet long, and his measuring-rod four feet and two-thirds long. This also is the English foot, the old Chinese foot being taken at eight inches.

The principal roof of the Ming tang was circular. The building beneath was square at the base. The idea was that of imitating the form of heaven and earth. It had nine rooms and eight windows.

There were two other chief buildings called Pi yung and Ling tai. The Pi yung was on the east, as it is now in Peking. It contains at present the stone classics, cut by order of the Emperor Chien lung, and the Imperial act performed there is the exposition of the classics before the assembled court. The old Pi yung was devoted to music, archery and the like functions. The Ling tai was employed as a cluster of offices for those officers who were engaged on preparing the calendar and calculating eclipses.

We find in the *Kau kung ki* that the dimensions of the Hia dynasty ancestral temple are given. It is there said to have been 14 feet deep and $17\frac{2}{3}$ feet wide. There were five rooms occupying the north-east, south-east, north-west, south-west and centre; each was fifteen feet square; the middle one was three feet wider from east to west than the others. There were nine steps on the ascent. There were windows as well as doors to each of the five principal rooms. The doors were four and the windows eight. Lime made of shells was used in ornamenting the building. At the main door was a separate hall, said by the *Erya*, a very ancient authority, to have been a school-room.

In this account of a Hia dynasty temple we see that the five elements' philosophy had a voice in the arrangement of rooms. The idea of the architect would be conformity to nature as interpreted by the physical theory of the time. The same occurs in the round hall of the Chow architecture. Roundness means the shape of heaven. The same architecture makes the circle rest upon a square, which is the earth's figure, according to the common idea of the Chinese in ancient and modern times.

In the Imperial temple of the Shang dynasty the idea of a double roof was introduced. The length of the hall was 56 feet. The emperor's platform was raised three feet. The roof was made double on all four sides. The object in this was to lend an air of greater richness and dignity to Imperial buildings.

In the Chow dynasty temple the breadth was 54 English feet and the depth forty-two feet. The height of the Imperial dais was six English feet. There were no chairs in those days. They were first used in China in the Buddhist period.

In the plan of a house the ancients were influenced by filial piety, which caused them to begin with the ancestral hall in the south-east of the plot of land set apart for the building of the palace. This, according to the *Chow-li*, was the idea of the architecture of B.C. 2200. Religion, as people then understood it, was a powerful sentiment in their minds. So in the First Book of Kings it is recorded first that Solomon built the house of the Lord and afterwards the king's house and the house of the forest of Lebanon.

The double roof mentioned as an accession of luxury, when compared with the simplicity of the Hia and ascribed to the Shang dynasty, B.C. 1766, has always continued to be a favourite ornament with the Chinese. It is noticed particularly in gate-towers, pagodas, and towers at the corners of walls. A desire was felt to increase

the appearance of gorgeousness in the imperial dwelling, and magnify the difference between the king's house and that of the common people. This effort became greatly intensified in the Chow dynasty. Then the palace assumed the majesty and beauty of the Ming tang. Many separate buildings began to be erected for each function of the king. The servants of the king or emperor (we may call him by either title) had the most multifarious duties to perform, and the offices were multiplied almost beyond belief; so in Peking at the present time the palace buildings and offices of Government are counted by hundreds.

So far as we have yet gone it will be observed that architecture was at first geometrical. Houses were built to the southward, and they faced north, south, east and west. The circle and the square were both introduced in imperial architecture. The simplest geometrical forms constituted the basis, and ornament was added later. The ancient Chinese built of brick with a wooden framework. The provinces which the nation then occupied are chiefly plains and broad valleys. The chief constituent of the soil is the loess, which is partly a subaerial deposit and has partly become diluvial and alluvial by the action of rivers overflowing every summer. There is also a good deal of yellow clay. Bricks were easily made out of these constituents. The climate was milder than it is now, and the labours of house-building were carried on in the winter. Nothing was found so convenient as brick for house-building, and nothing lends itself more readily to geometrical manipulation.

Chinese architecture then had nothing to do at first with the imitation of tent forms. The suggestion has been made that the concave shape of the eaves of Chinese buildings shews that the people love to remember the nomadic life which they once led when they occupied tents of a conical form or shaped

like a house-roof. No such concave curve is seen in any old roofs in sculptures hitherto brought to light. In the Chinese books which contain illustrations to the classics the roofs of temples are indeed turned up at the eaves, but this, I think, must be an error. It would arise partly from an incorrect way of representing in perspective the lines round a corner, and partly from the habit which most people have of carrying the present into the past and making their ancestors responsible for their own peculiarities. The early architecture of the Chinese was plain, geometrical and practically useful. The love of fantastic curves in the lower part of roofs came into vogue later, and must be sought rather in Buddhism.

In the *Book of Odes* we have the grandfather of Wen-wang removing to the south of Chi-shan in Shan-si. This he did for the sake of peace. The tribes of Tartary annoyed him. He left them his old territory and cultivated new lands. He built a new home, and in erecting it used the plumb-line and a wooden wall-frame. Boards are roped together and earth is filled in between them. Such earth hammered down constitutes a wall, and this is still the mode of building used in the north in making earthen walls. When the wall is washed away by rain they build another. This simple style was adapted to an undeveloped state of society, and building by this method allowed houses to be very rapidly erected. Two doors were sufficient—the *kau men*, or “high” gate or outer enclosure gate, and the inner or answering or central gate.

On account of the universal belief in omens it was usual to divine by the tortoise to know if the locality selected was a good one. In ancient China we can judge of the customs of the people in the second millennium before Christ by the three older classics. In the *Book of Odes*, building was not commenced without an omen of a favourable character. This was done when Tai-wang moved south-west from the valley of

the King river, in which lay his old residential city Pin, to the south of Chi-shan, in the valley of the Wei river. He then inscribed on the shell of a tortoise certain lines, and upon scorching it received such an answer that he knew that the site he had arrived at would be suitable. The cardinal points were determined and the simple laws of ancient architecture were followed.

Orientation was made an important point, and there was provision for religious ceremonies. A burnt sacrifice, for instance, was offered even in front of private houses in summer, and on that occasion the altar was on the south-east, the worship being that of the god of fire. This seems to shew that the worship of the five elements was intimately connected with the ancient rules of house-building.

Beside the *kau men* and *ying men*, there was a gate called the "tiger gate," from a picture of a tiger drawn there, as the symbol of bravery. This was to add to the dignity of the master of the house. It was outside the *kau men*. Within was the "pheasant gate," from the representation probably also of that bird drawn there. Outside of it were lofty pillars or flag-posts and standard measures for markets to follow.

The art of house-building was spread among the Tartar tribes by the Cheu family when they took refuge from the tyranny of the Shang dynasty in the Pin country, fifty miles north-west of Si-an-fu, and rather near the western boundary of the province of Shen-si. There the aboriginal tribes had lived in loess caves. This kind of house is there very convenient, warm, well-protected and economical. The loess deposits where they occur are found in the valleys with a vertical front of uncertain height varying from a few feet to several hundred feet. The rude savages who had been living in a single room were taught to make double chambers and upper rooms by their new friends from civilized China. This their friends did by instructing them in the art of making bricks in kilns.

This seems to be the meaning of the passage *t'au fu t'au hiae*—“they taught the aborigines to make double houses and dig caves with the help of the kiln.” Yet the commentators explain the passage differently, as if it was meant to say that the people were taught to live in kilns, and LEGGE explains that the houses were shaped like kilns. In RICHTHOVEN’s *China* there is a picture of houses in five stories one above another, all of them having arched windows and doors. There is an outside staircase connecting the houses of each story. On the opposite page is another front of a house hollowed out of a loess bank. It is fenced by a low wall on the outside. This house, hollowed out of a loess bank, communicates with the outside simply by three windows and a door.

On the whole the classical architecture had square and round buildings and double roofs, but it lacked the arch, and the modern *t'ing-tsz* was still undeveloped. Halls were matted. There were no chairs, but there were low tables. Lucky days were selected for building. The emperor’s throne was a high dais on which he sat cross-legged and facing the south. His personal suite stood behind him and on his right and left. The ministers of state stood in rows on the east and west. In the open space between them, individuals came forward and prostrated themselves to speak to the emperor and answer questions. There were three audience-halls, that of the daily audience for a few persons, near the private apartments, that of the court generally, more to the front, and that of great festivals, still more to the southward. The arrangement was something like what it is at present in Peking. The ministers held batons in their hands, or writing brush and tablets. In the larger assemblies the greater part of the nobles and officers prostrated themselves in their places in an open-paved court which was unroofed. The emperor and his suite were on a raised platform which was roofed. In ancient times North China had a mild climate in winter, and the grandees,

clad in fox-skins, would not feel cold. The ancestral temple is specially marked out for admiration in the *Four Books*, just at the end, where Confucius is compared to a house whose encompassing wall is much higher than that of all common persons. An observer may see the beauty of a common house by looking over the wall. But the wall of the house of Confucius is several yards high. The disciple, in fervent love for his master, adds that it is with him as with an ancestral temple. It must be entered if its beauty is to be seen. When he said this he was thinking of the double roof, the vermilion pillars of the hall, and within the tablets and the offerings, with the beautiful ornamented vases placed in order before each. Before perspective was ever studied the perspective lines of light and shade caused by these objects would be in his mind, and he would pronounce the effect of the whole to be beautiful. It was the most fitting image he could find to represent the superiority of his master to all other men.

Architecture is introduced with the gnomon and its shadow. A vessel of water is hung up by a string so as to obtain a level. When meeting with this in the *Chow-li*, that valuable repertory of archæological knowledge, no reader will fail to picture to himself the ancient artificer clad in coarse linen in summer, or sheep-skin in winter, determining for himself the level of water for the wall of a house he is building. To have his work strictly according to the cardinal points he marks the shadow of his gnomon. For imperial use there was a gnomon of which the length was eight feet, or $5\frac{1}{3}$ of our English feet. They had the plumb-line, by which they could make the pillars of wood, which supported the roof, perfectly straight. They had also the mason's rule, which they called *kwei* 規, and they used it to secure that the bricks of their walls should be laid evenly, and the walls themselves be both horizontal and vertical.

According to the *Chow-li* the ancient art of house-building

was controlled by astronomy. It is mentioned that the mason's rule—*kwei*—was placed level with the sun at his rising and at his setting. The builders also looked at stars by night to ensure a perfect level, and to obtain an exactly south façade. In the old architecture of China this was viewed as very important, as it was also in Egypt and Babylon. In these countries the old civilization produced this scientific element in the buildings of the time. Heaven, earth and man are in harmony according to the Chinese idea, and the emperor's palace could not be erected otherwise than facing the south, four square, and with its four walls strictly north, south, east and west. At present it is admitted that the architecture of the pyramid builders was wonderfully accurate in its aspect as regards the heavenly bodies. The great pyramid was not only a tomb for the sovereign, but an observatory from which the stars as they passed the meridian could be observed from its interior with extreme exactness. It is therefore not more than what we might expect to find the art of the builder of palaces in old China also, but in a rougher way, controlled by astronomy and the principles of trigonometry. This part of the modern art of architecture in the West is without doubt traceable to the early Asiatic and African civilization, just as the trigonometry and geometry of the Greeks were suggested to them by the plumb-line, the water-level and the gnomon. It was not Euclid that discovered the properties of the right-angled triangle. They were known to Pythagoras, and before the time of Pythagoras they were familiar to the wise men of Babylon and of Egypt. He travelled in those countries and he was the first to introduce geometry among his countrymen. China also knew, eleven centuries before Christ, the properties of the right-angled triangle.

The capital city must be a square of nine *li*, and there being about six *li* in an English mile, the whole circumference is a mile and a half. It must be square and have three gates in each

wall. It is the city in which the emperor resides. In front of it on the south-east is the ancestral temple, and on the south-west is the altar of the gods of the land. This is just the arrangement followed in Peking in the plan of the palace. In front of it on the east is the Temple of Ancestors, and on the west the Shê tsi t'an. The Emperor Yung lo erected this palace and the Manchus inherited it, occupying the old imperial residence when they conquered the country. But it is otherwise with the gates. According to the ancient plan the emperor's city had twelve gates leading from it. Behind was the market, and in front the emperor met the court every morning. Each of the twelve gates led to a street broad enough to allow of a carriage-way in the middle and a *trottoir* for men on the right and women on the left. The modern arrangement is different.

Imperial editions of the classics, such as the **欽定周官義疏** *Ch'in ting Cheu kwan Yi su*, contain illustrations which deserve study, because they are the result of the profound examination not only of old texts but of sculptures rescued from mounds. Attention should be given to the well system of agriculture in this connection. Ancient China was always feudal, and the emperor could command the service of the people of each barony. Agriculture was the basis. The workers of the soil gave a share of their work to the cultivation of common land. In providing for labour in the erection of palaces and imperial temples, the feudal system supplied it, and as that system was based on the justice and benevolence of the sovereign, the people came, says an old classical record, like sons to work for a parent.

II.—ARCHITECTURE OF THE POST-CONFUCIAN AGE.

The architecture of the time when the power of the sovereign had declined in China became special by the changed conditions. Feudal chiefs ascended independent thrones and fought with each other for supremacy. A struggle for hegemony became an evil which was chronic. There was a two hundred years' war, and machines were constructed for taking cities, the mode of making which is described in *Metsü*.

This state of affairs led to rivalry in palace building. The Imperial revenue was in the hands of the feudal chiefs, and with the people's money they built beautiful palaces and surrounded them with pleasure-gardens. Among them may be particularly mentioned the park and palace of the Wizard Mountain, just beyond I-chang, at the entrance to the beautiful land of Szechwen, where there is now a British Consul and a foreign community of merchants. The fact that the gorges should have been selected as the spot chosen for the site of a feudal palace plainly shews that poetic feeling ruled. In fact, at that time, there sprang up a school of vigorous poetry which has never failed since to influence the literature of this country. The romantic element could not fail, therefore, to appear in architecture, and so we find it. In the architecture of the Han dynasty there is a most remarkable grouping of romantic creations with a reproduction of historic scenes of an exciting and didactic kind, for there are both. Should someone ask, how was the spirit of poetry introduced into palaces and temples in their construction? the answer must be, by painting and sculpture. It is said in the *Shi ki* that "the Emperor is lord of the Four

Seas. All people constitute his family. If his palace were not ornamental he would not possess sufficient dignity. The palace must therefore be richly ornamented." In the palace they recognized the need of depth in the suite of rooms or courts through which the visitor is conducted to the audience-chamber. The architect built with this in view: he had to conceal the sovereign and his family within a succession of courts. He had to provide him with pleasure-gardens. This was imitated by the sovereigns of all the kingdoms of the Chinese heptarchy. Their palaces and parks became all the property of the Chin dynasty in the end of the third century before Christ. By the Chin Emperor's command a palace was built in the Wei valley, near Hien yang, the capital, to represent that of each defunct kingdom, and the peculiar construction employed in erecting the palaces of each with their ornaments would here be reproduced. The Ah fang was the most splendid, being the favourite palace of the Chin Emperors. We can tell the style of the architecture, for it is believed by Chinese critics to be represented in the Chia-siang sculptures. In the scene referred to we find roofs, pillars, low couches, and various architectural details fully represented. There is an audience-chamber in a pleasure-garden; above it is a gallery, and in front of it a large, high tree. The gallery presents a queen sitting on a dais with five female attendants. Below is a king, or noble, seated on a dais, before whom two officers are prostrate and knocking their heads against the ground. The queen wears a five-leaved crown, and the king the court-hat of the time, rising in front by a straight line deflected outwards and having a flat top falling to the crown. The roof of the gallery has men for its supports, that is to say, the pillars of the roof are Caryatides, and like Mount Atlas personified. The roof of the audience-chamber is supported by round pillars having three simple straight mouldings

above, which relieve the angularity. The round wooden pillar rests on a round stone as now in the modern Chinese style. The roof is tiled without the modern concave. At the ends of the upper roof-line large bricks are deflected upward and outward to a point, to remove the angularity there. Peacocks and monkeys are sculptured on the roof-line, as also winged men and various birds walking or resting.

A great peculiarity of the mythological period was the representation of historical scenes. It was before the age of theatrical representation which began in the Tang dynasty, but was only thoroughly inaugurated at the end of the Sung. The historic groups on the sculptured walls of the Chia-siang ancestral chapel are an example of how architecture makes use of history as a teacher. The great men of past times live again before the visitor's eye. As he passes along the ancestral chapel in its three compartments the guide points out to him on the eastern wall of the central hall the sculptured form of Fu hi, founder of the national civilization, who was, as I suppose, an ancient Chinese monarch, who received reverently from Babylon certain instructors in architecture and civilization, and to express this thought vividly he appears with the mason's rule in his hand. What gave him power over the people was scientific and civilizing wisdom. The termination of his body is partly that of a fish. It ends with a fish-tail, denoting that the sculptured idea is foreign. In the classics, Fu hi had not a fish-tail. He was a man like other men, but we are now in the age of mythological architecture. He is closely joined by intertwining of the tail with that of Tsang kie, who also holds a mason's rule right angled. Shen nung follows with the plough, and the Yellow Emperor, who first taught the people in the loess country to dig wells, to divide their fields evenly for irrigation, and to wear dignified robes with broad sleeves and a girdle. The Emperor Yau follows, who taught morality; Shun

succeeds him, who taught astronomy ; and Yü, founder of a great dynasty, who, when immense floods checked the labours of agriculture and drove the people to the high grounds to live in tents, undertook the control of the rivers, and restored the land to the cultivators. Then the rise of the Chow dynasty is pointed out with scenes from the history and poetry of the classics. This is followed by groups of an exciting character such as assassinations and battles from the age of Confucius and the two centuries which followed. The rise of the Chin Empire is also sculptured. Here battles on bridges and in rivers and in the air occur, with tiger-hunts, grotesque groups to excite laughter, and many festive scenes.

With such sculptured groups the emperors and princes of the Han dynasty adorned their palaces. The artists of those times were extremely fond of grotesque scenes and monstrous shapes. The sculptured halls of that age are reflected in the poetry, which consisted of long descriptive pieces, like THOMSON's "Castle of Indolence" or the separate books of the *Faerie Queene*. The princes of the house of Lieu gathered round them a choice school of literati and engaged them in discussions on the history of early times and on philosophical and religious dogmas. They talked about Confucius and Lau tsü, and wrote books for the princes and for the emperor. The subjects on which they wrote were politics, history, popular mythology, architecture and astronomy, and they compiled these works in prose or in poetry. A good number of them remain to us, and the discovery of the Chia-siang and other inscriptions and sculptures is a great help to the understanding of China as it was in the Han dynasty.

I learn from Lieutenant D. MILLS, who wrote to me in February 1887, when he had just visited the spot where these sculptures were exhumed, that, "the valley in which they

occur is about five square miles in area, and that the excavation was less than ten feet deep, but it would fill up quickly." The two gate-pillars stand in the excavation, rising about ten feet above the ground. The stone of these pillars has weathered brown. A large number of slabs have been taken out of the soil, and are now set up in an oblong tiled building, fifty feet by twenty, lining its walls without any orderly arrangement. Since the erection of this house other slabs have been dug out, and are piled on the ground in the house, which has no room for them upon its walls. The cutting on the sculptured slabs is about a tenth of an inch deep.

There would be village temples in the Han dynasty, erected to ancestors, as also to the gods of thunder, rain, and wind, and to the Great Bear and the gods of grain and agriculture. All have perished, because they were constructed with a wooden framework. The reason why this ancestral chapel of a prince, consisting of three chambers, has survived the storms and frosts of seventeen centuries, is that it was of stone.

A stone chapel with a stone roof entirely or almost entirely consisting of sculptured slabs and unsculptured slabs, was exposed to winds which blew dust upon it, and floods which dashed silt round it and filled up its interior, till it became buried more than twelve feet deep. The two stone pillars in front of it were twenty-five feet high, and are now buried to about that depth. This is a fact which shews what winds and floods can do in seventeen centuries in raising the soil. It also shews the supreme excellence of stone architecture, which is capable of preserving to us these valuable memorials of the China of the Han dynasty. The chapel dates from A.D. 147. The Pantheon is older by 174 years.

Lieutenant D. MILLS, in his visit to the Chia-siang inscriptions *in situ*, observed no traces of wooden beams in any of the stones belonging to the original chapel buildings. The

Pantheon in Rome when it has stood for eighty-three years longer will be two thousand years old. It is a circular building with a stone roof. The ancestral chapels in Shantung were rectangular stone buildings with two gables which fell in part many centuries ago, but the loess, with friendly assistance, buried the sculptured stones under the soil.² The buildings would in part be standing till quite recently, or the sculptured stones at least were preserved in good order where they fell. So far was this the case that the native archæologists have been able to tell us to a large extent what part of the buildings was occupied by each particular stone.

The question must here be confronted, how much of the Han dynasty architecture is of foreign origin? In the *Archæological Survey of India*, kindly lent me by Mr. KINGSMILL, we find in the 1st volume, published in 1871, the question discussed how Greek sculpture is found occupying a place in Buddhist architecture. To this question General CUNNINGHAM replies, that Bactrian Greek sculptors would find ready employment for their services among wealthy Buddhists, just as later in the time of the Mogul Empire goldsmiths and artillerymen were employed by the sovereigns. It was a Buddhist custom to make gifts of statues and pillars to the monasteries. This gave continuous employment to many skilled workmen. In the city of Mathura, which lies on the Jumna between Delhi and Agra, there is a colossal image of Buddha the Teacher, measuring one foot across the palm. It would be thirty feet in height. The Chinese have such in their country, where the stone is easily cut and the Buddhist zeal of the community favoured the production of this kind of work. The statue was from 20 to 24 feet in height. Buddha

² In the Island of Jersey there is a stone chapel erected A.D. 1111. Its roof is of stone. It has stood more than 700 years—a signal instance of the permanence of stone roofs—but the roof has been replaced recently by a new one.

is represented as the Teacher, explaining the law to his disciples. It should be remembered that the coming and the laughing Buddha are one. In one of the female figures the attitude is peculiar. The left hand is brought across the right breast while the right hand holds up a small portion of drapery. The head is inclined slightly to the right shoulder. The hair is dressed in a new fashion, with long curls on each side of the face, which fall from a large circular ornament on the top of the head. This figure has a plump face with a broad smile, and it is one of the best specimens of unaided Indian art which General CUNNINGHAM had met with. He goes on to notice specimens of Greek sculpture mixed with that of the Hindoos. The costumes of the sculptured figures are Hindoo, Greek and those of some other unknown nation. There is represented in one place a Greek altar such as was dedicated to Bacchus. Adjoining a well-carved elephant in one place are certain inscriptions which contain the names of five Greek kings, including Alexander and Antiochus.

In the fifth volume of the *Archaeological Survey of India* the Doric character of architecture in Cashmere is illustrated. In some localities in North-Western India there was Indo-Corinthian and in other localities Indo-Persian. The Ionic style was introduced in Taxila and the Corinthian in Gandhara. All these styles flourished for several centuries. Thus, as far as stone was used in building, the imitation of Greek architecture and sculpture would naturally follow, and would spread into distant countries. But India, like ancient China, was well wooded, and, therefore, wooden pillars and beams continued to be used.

In the case of monasteries, pagodas, tombs and bridges, with certain other structures, stone was held to be better as a material. Civilization, commerce and national intercourse brought more and more wealth to the communities, and these buildings were erected by the gifts of individuals. In such

cases there would be a tendency to imitate Western art. This would gradually lead to the arch in bridge-building. So also the broad verandah, necessary in India to shade a bungalow from the sun, would lead to broad roofs, which were afterwards imitated by the Chinese.

The influence of Greek art would enter as an element in the Han sculptures in the following manner. The country being rich and at peace, many foreign improvements would be adopted. Workmen would be conveyed from a distance to do work for wealthy persons. These workmen would be instructed by skilled masters, who were either Greeks or the pupils of other masters who were taught by Greeks. In this way we may account for sculptured horses represented successfully in attitudes which without a long apprenticeship could not easily be produced.

III.—BUDDHIST ARCHITECTURE.

The third period of Chinese Architecture is the Buddhist. When the Hindoo Missionaries came to China to propagate their religion, they were lodged in an official building, called a *sī*, and in consequence of this their monasteries were called *sī* ever after. But the form they took in building was that of the Vihara, the Sanscrit name for a Buddhist monastery. The Buddhist monastery in China may have native Chinese features in some things, as when, for example, we find there the hall for ancestral tablets, in which the deceased priests of the monastery are honoured with worship, wooden tablets being used, just as in Confucian ancestral worship. But the great outline is Indian.

There may be gate lions, one on each side of the gate. The gods of native Hindoo polytheism are placed in the entrance-

hall. This is the locality in which the defenders of the Buddhist faith should be honoured. Here also is found the laughing Buddha, the Buddha of the future. Then come the bell and drum towers. Within is the teaching-hall of Buddha. The normal height of the statue known as the "teaching Buddha" is 16 feet, which probably is represented by ten feet eight inches in English measurement. Much smaller figures are commonly used. The pictures or statues on the east and west or right and left of Buddha are his audience. They consist of the gods of Brahminism, and of renowned Buddhist saints. Behind in another large hall is either the sleeping Buddha, or the ascetic Buddha, or the guiding Buddha, who is called Omit'o Fo, or the Buddha of the future, Maitseya, surpassing all the forms of Buddha in height. The other buildings are numerous. They provide living-apartments for the abbot and the monks under him, refectory, rooms for guests, kitchens, store-rooms, library, halls for the worship of the inferior divinities of Buddhism, and for the complete representation, so far as practicable, of the Buddhist world of worship, of suffering, of joy, of punishment, of salvation. In a Buddhist monastery the object of the architecture, and of the sculptured and pictorial representations, is to exhibit the world as it appears to the Buddhist. Buddha is enthroned on the lotus as teacher and redeemer, and the universe pays him homage.

The lion is not an Indian animal, but is or was Persian and Syrian. The Buddhists borrowed it as an ornament in their mythological conceptions from that part of the world. The whole ideology of Western Asia pressed into India in the age of the Persian dynasty of Cyrus and in part before that time. The lion very soon appears in the Buddhist books, though not in the lifetime of Buddha himself. Why, then, did the disciples of Buddha in North-Western India eagerly adopt this animal as a symbol, the animal being foreign.

It was because they were disputants, and in combating with Persians, Greeks and men of other races who engaged in religious disputation, they found that the lion was considered king of beasts and the symbol of victory. It is found, for example, in the Book of Genesis and other parts of the Bible as a symbol of power, courage and victory. The north-western Buddhists adopted it, as they did images and cosmogony from the nations which lay on that side of India, and used it in the service of their religion.

The pagoda was specially a Hindoo mausoleum for relics of Buddha. It is surprising how little it is used in Japan or in Lamaism. Osaka has but one pagoda and Tokio none. It is very much connected with the *feng shui* superstition, which was never adopted by the Japanese, and with the worship of relics. The number of stories is always odd, because odd numbers are male while even numbers are female. To benefit a locality the pagoda must have the power of *Yang*, the male principle. It is the dark principle *Yin* which does mischief. Pagodas are often built entirely of stone or brick. Quite commonly they have sculptured entablatures representing the life of Buddha, or scenes in the biography of some Buddhist saint.

Many pagodas are very pretty objects, and they have come to be a special characteristic of Chinese architecture. The curling eaves of Chinese buildings are probably an imitation of some early pagodas. They were erected in large numbers from the sixth century onwards, and since China has no explanation to offer of curling eaves, it seems necessary to assign them to a foreign source.

The erection of pagodas was a test of the skill of native architects, many of them being lofty, and built without wood. That they have been fairly successful in erecting strong buildings is evidenced by the fact that there are more old pagodas existing than there are old houses or temples. From the

seventh century onwards, there are still structures of this class. There is an octagonal pagoda in Peking of thirteen stories, and it dates from the year A.D. 600. The sculptured figures are all of moulded brick, and this is the material which has been largely used in erecting this pagoda. It is 275 feet 5 inches in height. This building, so high and so well preserved, is a good specimen of the durability of some Buddhist work in China.

The efforts of Buddhist architects were very much directed to the provision of images of a large size and great variety. Several types grew up which had to be constantly reproduced in new erections. Buddhism teaches contemplation, and does so by images as well as by books. The propagators of this religion aimed to gain the popular ear by appealing impressively to the eye.

The laughing Buddha at the gate indicates that the religion there professed is the pathway of joy. The second form of Buddha is that of teacher. The teaching Buddha is therefore the central object in the principal hall. Around are seen his audience of divinities and human beings. In some other hall is represented the ascetic Buddha, it may be with unshorn head and the attire of a hermit. The sleeping Buddha is quite a favourite subject. Some examples of this type are very ancient, coming down from the Tang dynasty, and made of sandalwood or copper. The guiding Buddha leads the soul to Paradise. The rock-hewn Buddha, of 16, 30 or 60 feet high, is like the laughing Buddha, the Buddha of the future.

Another effort made by Buddhist architects was to represent the Buddhist world in its completeness, or specially some part of it. Five towers on a lofty terrace represent the universe, as north, south, east, west and centre. Such is the Wu t'a sii, or monastery of the five pagodas, in Peking. When ordered to pray for rain, the Buddhist priests arrange the images in a square in some spot in the fields which appears

suitable. The arrangement is made on this principle. Rock-work is much used to represent imaginary worlds. Mud or clay is the material, and paint of many colours is used to deck out in the gayest finery grottos, bridges, winding-ways among mountains, temples and lakes. Some scene may have been drawn by a poet, or the writer of a Buddhist work in prose. A time comes when a decoration is required in a temple under repair. The scene of a book is then realized in mortar and paint.

Other features in Chinese house-building which are a tradition of the Buddhist age are the screen before the gate, and the figures on the roofs. Both these features are connected with *feng shui*, which, being an article of popular belief, it becomes requisite to protect buildings from the mischief likely to be caused by evil beings moving towards a house and capable of doing harm to the inmates.

The screen of brick-work, built like the character *pa* (eight), does not appear in old sculptures and has no ancient equivalent. It is an unpleasing feature which ought to be dismissed from modern architecture, but *feng shui*, unfortunately, insists upon it.

So it is with the little monsters seen on the line of a roof or on the projecting ledges below. They must, like the stories of pagodas, be in odd numbers, in order that the *Yang* principle may prevail over the *Yin*. Though their forms are so sinister looking, they are all friendly, and their ugliness is put on for effect's sake. Their office is to deter evil spirits. The dragon and monkey are the types of these figures. Both are in odd numbers; the larger is the dragon, usually one only, while the smaller is the monkey, which may be three, five or more. I have been at some pains to learn what they mean, and this is the result. It is probably one of those architectural peculiarities which the Chinese may claim as their own. But this is not certain. From Shanghai to Suez, all along

the southern coast of the continent of Asia, the people believe in the active agency of evil spirits constantly in motion and seeking opportunities to inflict evil on mankind. Against them protectors are sought for of every available class, and among them are these creatures which suit alike the Arab, the Persian, the Hindoo and the Chinese.

The result was that in house-building it was felt to be necessary to use protective measures against the forces of evil always threatening danger to men. The gate-screen and the small monster on the roof have the same office as the charm pasted over a door, or the amulet, the small bottle, the bronze mirror, carried on the person. They were supposed to have a magical effect of a defensive nature.

The result was disastrous in an architectural sense. The gate-screen conceals the entrance, and is placed where it is not wanted. It must as such be unpleasing. But popular superstition clings to the gate-screen. It lives still after many centuries of useless encumbrance. Outside the gate there is the *pa* character wall, within the gate is a screen. On each side is a lion. On the roof of the chief building are metamorphosed monkeys and dragons. We can bear the animal shapes for the sake of the grotesque, which human nature loves, but we cannot bear with the same equanimity the hiding of the front view. Our European training has led us to appreciate the excellent effect of an open view in front. To shut off from view the front of a building, is a mistake.

Gilding images was common in India about A.D. 500, and probably earlier. The Buddhists, by introducing the practice of gilding Buddha's image, greatly increased the impressiveness of their temples. This was a new element of beauty added to their architecture, which did not fail to affect the people powerfully in many ways. Let this point be well considered. In Europe, cut stone assumes a dark hue, especially in England. We enter a Chinese Buddhist temple as we see it in Hangchow

or in Peking. The beautiful colour of the gold image, untarnished after many years, is felt to be in itself pleasing. We then become conscious that to gild Prince Albert's Monument in Hyde Park and the statue of Victory in Berlin, was a useful preservative against weathering. The Chinese learned the effective use of gold in ornamentation from the Buddhists.

IV.—ARCHITECTURE OF THE MODERN PERIOD.

Printing commenced in the tenth century and, the Sung dynasty attaining power at that time, was accompanied by a Tauist revival. Of this there are several indications. The first Emperor, Chau t'ai tsu, had a Tauist friend, Chen twan, who, with the emperor's powerful aid, forwarded his own religious views. The predilections of the founder were shared by his descendants. Among them, Hwei tsung was a great lover of Tauism. The Fukien goddess Ma tsu, the sailor's favourite, belongs to this period. So also does the worship of Kwan ti, the god of loyalty, the favourite divinity of soldiers. Lü tsu, or Lü chun yang, the famous Tauist of the latter part of the eighth and the first half of the ninth century made Tauism popular near Lu shan, on the north-west shore of the Poyang Lake. Temples began to be erected to him in the twelfth century. The early Sung dynasty was then a time of rapid progress in popular Tauism. Nothing marks modern China more than the spread of Tauist worship in imitation of Buddhist worship, and this took place specially in the tenth, eleventh and twelfth centuries.

This fact implies a rapid spread of temple-building ; that is to say, Buddhist architecture was imitated most extensively at this time. It was a foreign art in several respects, and

through its being very full of idealism, it won its way to the heart of the Chinese. As to the form of the monastery and the arrangement of the halls, this imitation doubtless began in the Tang dynasty. But there was then no extensive national imitation embracing all parts of the empire. This appears to have taken place in the Sung dynasty, as the examples just given combine to show.

In a large Tauist temple, such as the Tung yo miau, in Peking, in the first small halls at the door in the neighbourhood of the Bell and Drum towers, are certain military images. They indicate protection to the religion of which this is a temple. In this they simply repeat the idea of the hall of the four kings who, at the entrance to a Buddhist Monastery, take the part of the defenders of Buddhism. Beyond is the hall in which the god of the east mountain is worshipped. He takes the place of the teaching Buddha of Buddhism. In the temple of the god of medicine in Peking, in front are distinguished physicians of antiquity. Behind them is the central idol, that of Yü hwang. Farther still behind is the hall consecrated to the worship of the Three Pure Ones. Such a disposition of the halls and statues is mostly taken from the Buddhists.

We see, then, that the Confucianists had in the Sung dynasty ceased to be enemies to Buddhism. They saw that the foreign idolatry was popular, and they decided to leave it to work out its own future. They made deities of native origin, like Lü chun yang, Ma tsu and Kwan yü, and everywhere temples were erected in their honour. Temples had been Confucian and Buddhist. They now became Confucian, Buddhist, and Tauist. An extraordinary number of new temples must have been erected in the Sung dynasty by the Tauists. The emperors favoured them, and this led the people to favour them also. The Ch'eng hwang miau in each district city and prefectoral city seems now to be an

essential part of Chinese intitutions. But it is not in fact older than the Sung dynasty in most cities. I have noticed one which was erected in A.D. 917, in the Wu tai period, so that probably this type of temple was first introduced in the Tang dynasty, but it was the partiality of the Sung imperial family for Tauism, and the tolerant political tone of the Sung literati, which spread this sort of temple and other types of Tauist sacred buildings throughout the empire.

In the Sung dynasty, the first part of the modern age of Chinese architecture, we have the results of the devotion of the nation to Buddhism during seven centuries. Two great forces have animated the nation since that time. The one was the Confucian and Tauist revival of the Sung dynasty, the other was the school of critical research of the present dynasty. The Confucian revival led to political toleration, and so foreign architecture, for example, might be imitated without offence. The principles of the Chinese Government from the tenth century forward have allowed men of different religions to reside together, and the magistrate is expected to keep the peace between them if they offend. The consequence is, that Hindoo, Moslem and new European architecture, in the erection of the sacred buildings of each religion, are seen together in China. Toleration of foreign religious tenets has favoured the mixing of styles in buildings and in art generally. This freedom of choice has been encouraged by the critical attitude of the literati in the present dynasty. China is now more eclectic than it ever was.

The school of critical research which has flourished during the last two centuries has paid special attention to the classics, and among them to the *Chow-li*, whence facts on ancient architecture are gathered. It is singular that there should be important differences of opinion on the manner in which the Temple of Heaven ought to be built, and whether Confucius ought to have a statue in his temple or not. The result of

researches in the Ming dynasty led to the abandonment of the statue of Confucius and the restoration of the old Confucian tablet. This was an instance of recoil from Buddhist views of art. Yet in some cities the statue remains, the decree of the emperor on the subject not having been very peremptory. But the spirit of modern China is against the use of statues in Confucian worship. The Buddhist love of statues in temples does not in any way influence the true Confucianist, who glories in his freedom from popular Buddhism. So also during last century it was decided not to have dual worship at the Temple of Heaven, but to worship there only the Supreme Ruler.

The Sung dynasty architecture is not specially known by examples, because it has been outshone by the works of the Yuen and the Ming dynasties, but it may be studied, because books printed with engravings exist, and there are much fuller details and materials for research in that age than previously. For the ancestral temple, for example, it is interesting to find that Chu fu tsī made inquiry into it, and determined its essential features. The Chinese art of the Golden dynasty in North China remains in a few octagonal pillars inscribed with Buddhist charms. Sanscrit and Chinese characters are here seen cut in limestone.

Art rose higher in the Yuen dynasty, and the Chü yung kwan arch and inscription, which have stood for six hundred years, shew that China at that time undertook to develope new types of architectural work. But the Yuen dynasty architecture was surpassed by that of the Ming dynasty. It was then that Chinese art rose to its greatest height. The Emperor Ch'eng tsu, of the Yung lo period, was the greatest of the Ming line. It was he that made Peking what it is. The plan of the city, the tombs, the great bell, the fortified passes in the Great Wall are his. These and the grandeur of the city gates and wall belong to the Ming dynasty and to him in particular. In

the time of Shun ch'i and Kang hi, an effort was made to improve the astronomical observatory. This was done by removing the observing instruments from the tower and replacing them by machines cast by VERBIEST and some presented by the French king. Underneath the tower is the chamber for observing the length of the shadow at the winter solstice and on other occasions. Peking is the only capital in the world on whose wall is seen a collection of large bronze instruments intended for astronomical observation. They lend a character of refinement to the city to which they belong.

The influence of the Emperor Chien lung was directed to the production of substantial architecture in various styles. His Buddhist, Confucian, Moslem and Italian erections were well done in their day. Yet now the relentless changes wrought by time have reduced many of them to a ruinous state. His Italian structures at Yuen ming yuen were burnt in the war of 1861. High civilization and refinement led this Emperor to look kindly on fashions of all nations and to take pleasure in introducing them into his country. It will never cease to be a subject of regret that the buildings in the parks outside of Peking were burnt. There must be something wrong when it is found necessary to burn works of art.

In the changes made by the Emperor Chien lung in the temple of Confucius there is a distinct aim to restore the ancient classical structure—the Pi yung kung. The brevity of classic texts renders exact restoration to a large extent conjectural. In this case there is a circular marble tank. In the centre is a hall in which is a throne for the Emperor when he expounds the classics. The south face of this hall consists entirely of lofty doors admitting light through thin bamboo paper.

In the architectural works of the present dynasty, as of the Ming, the *feng shui* ideas have never been abandoned. China has ceased to build new pagodas for the sake of riches

and prosperity to a locality, but she puts the old ones in repair when money can be obtained for the purpose. The roofs of temples are still ornamented with a view to *feng shui* opposite to the openings of lanes in Peking. Lions are set up, or stones with the powerful name of the Tai shan god, to frighten away demons who might be intending to come that way. The superstition of *feng shui* is retained in house architecture even in this age of growing knowledge. In judging of Chinese architecture there are two chief divisions of work to be looked at. The one is its general excellence, the effect of dignity, solemnity, richness and grandeur on the whole. The other is the special excellence of the parts. In both there is room for the greatest genius. In regard to the former, it may be noticed that the greatest triumph of Chinese architecture is in the effect on the whole. In the Ming tombs we have the perfection of Chinese power of arrangement. It is a ride of seven miles from the entrance of the valley to the tomb of Yung lo. The valley is occupied by the thirteen tombs. At the entrance the marble gateway attracts special attention. Ninety feet long by fifty high, composed of marble, and seeming to be roofed with tiles, it is seen from a great distance, and it has stood for three centuries and a half. On nearer inspection it is found that the roof is cut marble, and when this fact is observed, the whole structure is seen to be a remarkable triumph of architecture. The P'ai leu of China takes the place of the triumphal arch of Europe, and this one at the Ming tombs is the best in the country. It was erected at a time when the Chinese building and bell-casting art reached their culminating point. The original red and green colours have long since weathered down to a sober grey. Passing this we proceed through several avenues of trees and several gateways till the avenue of animals is reached—a truly striking feature. Lions, unicorns, camels and elephants stand and kneel in pairs. The four elephants are each cut

from one stone. They are 13 feet high and 14 feet long. Thus it is seen that the Chinese are capable of Egyptian effects in working in stone if only their country did not consist of alluvial plains, which necessitate a brick architecture. Then the hall for sacrifice is the third great feature. It is 70 yards long by 30 deep. The teak pillars, 12 feet round and 32 feet high, are 32 in number. The building is 64 feet high. It is reached by a marble ascent of 18 steps, and is surrounded by beautifully-carved balustrades. The roof juts out 10 feet beyond the walls on which it rests. The fourth great feature of the Ming tombs is the tomb itself, above this passage. In front of it is a mass of solid stonework which supports the monumental stone on which is inscribed in characters of enormous size the posthumous name of the Emperor Yung lo, who died A.D. 1425. Beneath is the coffin-passage, 39 yards long, conducting to the tomb-door, and the visitor arriving there ascends to the platform above by a long staircase. Here the stone, three feet thick, two yards wide, and high in proportion, with the Emperor's name on it, may be observed. It was originally painted with vermillion. Then there is the mound, half a mile in circuit, containing a hemispherical chamber, in which is the coffin. The chamber is large enough to hold probably 400 persons.

In this work of construction we see Chinese architectural skill at its acme of power. So many remarkable features combine in the Ming tombs that we must in this instance award to Chinese architecture the praise of success in imparting to the imperial tombs an air of great dignity and solemnity.

Chinese art is to be praised for the lightness and grace of the curve of a heavy roof. The Greek loved to see lines of beauty at the head of a column, and a succession of columns seen in vanishing perspective has a very lovely effect. The

effort of Chinese art is rather to lighten the appearance of heavy masses of timber in a roof by curves and the use of coloured tiles.

In the modern style we find the shaft of a column carved with dragons, and this mode of ornamentation has lately become commoner than it was. It is observable in the guild-houses of Ningpo and Hankow. If in Shanghai commercial guilds should build new houses suitable for theatrical performances, this kind of ornament would be adopted.

We also find in modern style a special development of the *t'ing tsī*. This first occurs in the sculptured halls of the Han dynasty. An ornamented roof rests on pillars. The pillars enclose a space which is open all round. We see it in the baldacchino of Romish cathedrals, in the kiosk of Constantinople, in the summer-house or arbour or bower of a pleasure-garden, and in the building over the stage of a Chinese theatre. The roof of a *t'ing tsī* may be very simple, as when made square with four slopes, or very complicated, as when gables and slopes alternate. Examples of rich variety in the roofing are seen in many theatres and in the corner towers of the Peking Palace wall.

In the Temple of Heaven the altar is carried to its highest point. Its circularity, its marble pavement and its numerical arrangement deserve attention. It is 90 feet wide at the top where the emperor kneels on the circular stone in the middle. He faces the north while kneeling, and in front of him is the tablet of Shang ti, the Supreme Ruler. Round the circular stone are eight concentric circles of marble stones. Nine stones make the first of these circles. Double that number form the next. Twenty-seven, thirty-six, forty-five, fifty-four stones form the next four circles. The three outer circles have sixty-three, seventy-two and eighty-one stones. These circles represent the universe, which consists of nine concentric spheres. This symbolism also occurred

in Western Asia, and the city of Ecbatana, for example, was built on a plan which exhibits the same principle as its foundation. The marble stones on the middle and lower terrace of the altar are also placed in circles. Outside of them are the boundary-walls of the altar, which are also circular. The lower terrace is 210 feet wide and the middle one 150 feet. There are four flights of steps connecting the upper, middle and lower terraces. The altar is 16.95 feet high. When the emperor worships here, which he does twice a year, he acknowledges Shang ti as his superior, he himself representing the universe symbolized in the mystic numbers of this unique and beautifully-proportioned structure.

We also find bridges greatly improved in the modern style by adopting the arch. This came in with Buddhism, for we find it in the pagodas. At present it is used when it is desired to span rivers by bridges. Made with an arch for foot-passengers, such structures look well to the eye, but they are inconveniently steep, being often 30 feet in height. Such bridges are made with steps so that they are crossed easily by burden-bearing coolies. Beasts, however, cannot easily use them, which is a great defect. The appearance of these bridges is agreeable to the eye, and they last long, because the superincumbent weight is efficiently sustained in the most economical manner by the arch. Many bridges in modern style would be better for being not so steep as they are, and for not being made with steps. They ought to be built not only for longevity and elegant appearance, but for the convenience of traffic. The custom in China is for the rich to erect bridges and dams from charitable motives, and in order to obtain benefits in return from the unseen powers. The money is forthcoming, however much may be required, because of the charitable disposition of the donor. It might be, however, better used than it often is, and much greater convenience for the public

secured. There is often a want of economy in the expenditure. The Chinese are ready to give, and many of them are very rich, but they might give more wisely than they do.

Ultimately, in regard to railway construction in this country, the rich natives will bear a chief part of the burden. There is a large quantity of wealth in their hands. For this purpose, at present, they will not give as they would for a costly bridge. No one would praise them for it. They do not think that the unseen powers, that make men rich and give men many children and grandchildren, will favour the opening of railways as they do the construction in convenient spots of bridges and embankments. When they learn to feel this, and are convinced that the Buddhist doctrine of moral fate which influences their actions approves of railways, the money will come and come in abundance.

** For illustrations of Chinese Architecture the reader is referred to works containing plans, engravings and photographs. Among these may be mentioned THOMSON's *Views of China*, the plates to Macartney's *Embassy*, Père ZOTTOLI's *Cursus Litteraturæ Sinicæ*, *Mémoires concernant les Chinois*, and various recent books of travel in China.

The number of photographs taken by natives is now so great that there is scarcely a remarkable building in any part of China of which a good photograph may not be obtained at Shanghai or elsewhere.



SMITHSONIAN INSTITUTION LIBRARIES



3 9088 01579 3896